

Claims

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent is:

1/30/2007 1. A contents alteration detection apparatus having a data filling apparatus and a detection apparatus, said data filling apparatus filling certain embedding data to contents data being objective to embed said embedding data, said detection apparatus detecting whether alteration was added to said contents data or not, said data filling apparatus, comprising:
a contents data dividing means for dividing at least a part of said contents data into a plurality of first data blocks; and a data filling means for filling each of certain first embedding data to each of said divided first data blocks to generate a plurality of second data blocks, said detection apparatus, comprising:
a data extracting means for extracting said embedding data filled in each of at least a part of said second data blocks (second embedding data); and an alteration detecting means for detecting whether or not alteration was added to each of at least a part of said second data blocks based on said extracted second embedding data.

2. A contents alteration detection apparatus having a data filling apparatus and a detection apparatus, said data filling apparatus filling certain embedding data to image data, said detection apparatus detecting whether alteration was added to said image data or not, said data filling apparatus, comprising: an image dividing means for dividing said image data into a plurality of first

5. The contents alteration detection apparatus according to claim 4 wherein said data extracting means extracts as said second embedding data, from each of said plurality of second image blocks, the data represented by the relationship between or among said plurality of unit data values contained in each of said second image blocks according to a certain rule.

6. The contents alteration detection apparatus according to claim 5 wherein said alteration detecting means detects whether alteration was added to each of said second image blocks or not based on results of comparison between said embedded first embedding data and said extracted second embedding data.

7. The contents alteration detection apparatus according to claim 3 wherein said first image blocks and said second image blocks are conversion blocks that contain said unit data, and also contain one or more sets of conversion coefficients acquired by dividing image data into certain processing blocks and converting it from a space area into a frequency area, respectively.

8. The contents alteration detection apparatus according to claim 3 wherein said first image blocks and said second image blocks are DCT blocks that contain said unit data, and also contain plural sets of DCT coefficients acquired by dividing image data into certain DCT blocks and performing discrete cosine transformation (DCT) process on it.

1 9. A data filling apparatus filling certain embedding
2 data to image data so as to detect whether alteration was
3 added to image data, said detection being performed,
4 based on second embedding data filled to each of a
5 plurality of second image blocks contained in said image
6 data, by detecting whether or not alteration was added to
7 each of said image blocks, said data filling apparatus
8 comprising: an image dividing means for dividing image
9 data into a plurality of first image blocks; and a data
10 filling means for filling each of certain first embedding
11 data to each of said divided first image blocks to
12 generate a plurality of second image blocks.

1 10. The data filling apparatus according to claim 9
2 wherein: said image dividing means divides said image
3 data into said plurality of first image blocks containing
4 a plurality of unit data respectively; and said data
5 filling means adjusts a relationship between or among a
6 mutually corresponding plurality of said unit data values
7 contained in each of mutually corresponding two or more
8 of said first image blocks so that it represents said
9 first embedding data according to a certain rule, filling
10 said first embedding data to each of said plurality of
11 first image blocks to generate.

1 11. The data filling apparatus according to claim 10
2 wherein said data filling means, in the case that
3 alteration was added to any said second image blocks,
4 adjusts said mutually corresponding plurality of unit
5 data values contained in each of said second image blocks
6 to which alteration was added so that said values do not
7 comply with said certain rule.

1 12. A detection apparatus for detecting whether or not
2 alteration was added to each of a plurality of second
3 image blocks generated by dividing image data into a
4 plurality of first image blocks and filling each of
5 certain first embedding data to each of said divided
6 first image blocks, said detection apparatus comprising:
7 a data extracting means for extracting embedding data
8 filled in each of said second image blocks (second
9 embedding data); and an alteration detecting means for
10 detecting whether or not alteration was added to each of
11 said second image blocks based on said extracted second
12 embedding data.

1 13. The detection apparatus according to claim 12
2 wherein: said image data is divided into said plurality
3 of first image blocks containing a plurality of unit data
4 respectively; said second image blocks are adjusted so
5 that the relationship between or among a mutually
6 corresponding plurality of said unit data values
7 contained in each of mutually corresponding two or more
8 of said first image blocks represents said first
9 embedding data according to a certain rule; and said data
10 extracting means extracts as said second embedding data,
11 from said plurality of second image blocks, the data
12 represented according to a certain rule by the
13 relationship between or among mutually corresponding
14 plurality of said unit data values contained in each of
15 corresponding two or more of said second image blocks.

1 14. The detection apparatus according to claim 13
2 wherein: in the case that alteration was added to any of
3 said second image blocks, said mutually corresponding
4 plurality of unit data values contained in each of said
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7 the steps of: dividing image data into a plurality of
8 first image blocks; filling each of certain first image
9 blocks to generate a plurality of second image blocks;
10 extracting embedding data filled in each of said second
11 image blocks (second embedding data); and detecting
12 whether or not alteration was added to each of said
13 second image blocks based on said extracted second
14 embedding data.

18. A medium in a data filling apparatus filling certain embedding data to image data so as to detect whether or not alteration was added to image data, said detection being performed, based on second embedding data filled to each of a plurality of second image blocks contained in said image data, by detecting whether or not alteration was added to each of said image blocks, said medium carrying a program for having a computer execute the steps of: dividing image data into a plurality of first image blocks; and filling each of certain first embedding data to each of said divided first image blocks to generate a plurality of second image blocks.

1 19. A medium in a detection apparatus for detecting
2 whether or not alteration was added to each of a
3 plurality of second image blocks generated by dividing
4 image data into a plurality of first image blocks and
5 filling each of certain first embedding data to each of
6 said divided first image blocks, said medium carrying a
7 program for having a computer execute the steps of:
8 extracting embedding data filled in each of said second
9 image blocks (second embedding data); and detecting
10 whether or not alteration was added to each of said

